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SHELTERING TO MEET THE GLOBAL THREAT



The Joint Committee on Tactical Shelters (JOCOTAS) is expanding contingency basing standardization.

By Frank Kostka, JOCOTAS Support Contractor

We are currently facing a worldwide threat from institutional Cold War adversaries, non-state players and lone wolf assailants. Recent economic downturns and political turmoil are fanning nationalistic fervor and driving unrest in Eastern Europe and the South China Sea. A United Nations Annual Report stated that the reduction of defoliant operations in South America could increase cocaine production by 400 tons per year. The southern border is the conduit for the overwhelming majority of cocaine bound for the United States driving new requirements for interdiction.

The U.S. will continue its historic role of international first responder to natural disasters and epidemic outbreaks. U.S. African Command (AFRICOM) documented on January 12, 2015 that Force Provider components were being used to house U.S. troops in Liberia participating in Operation United Assistance. U.S. forces also worked in Senegal and the Central African Republic. A total of twenty-five 150 Soldier Expeditionary Force Provider Modules were deployed.

“The Nation” reported on 20 January 2015 that U.S. Special Forces Command (SOCOM) between 2012 and 2014 executed a diverse mission portfolio across 105 nations. As of April 2015, SOCOM was actively working in 105 countries. They also established Special Operations liaison officers in fourteen embassies advising allied nations.

In Army Vision-Force 2025, the Service envisions a joint

team operating in a decentralized, distributed, and integrated manner deliberately masking operations and denying adversaries opportunities over a wide area.

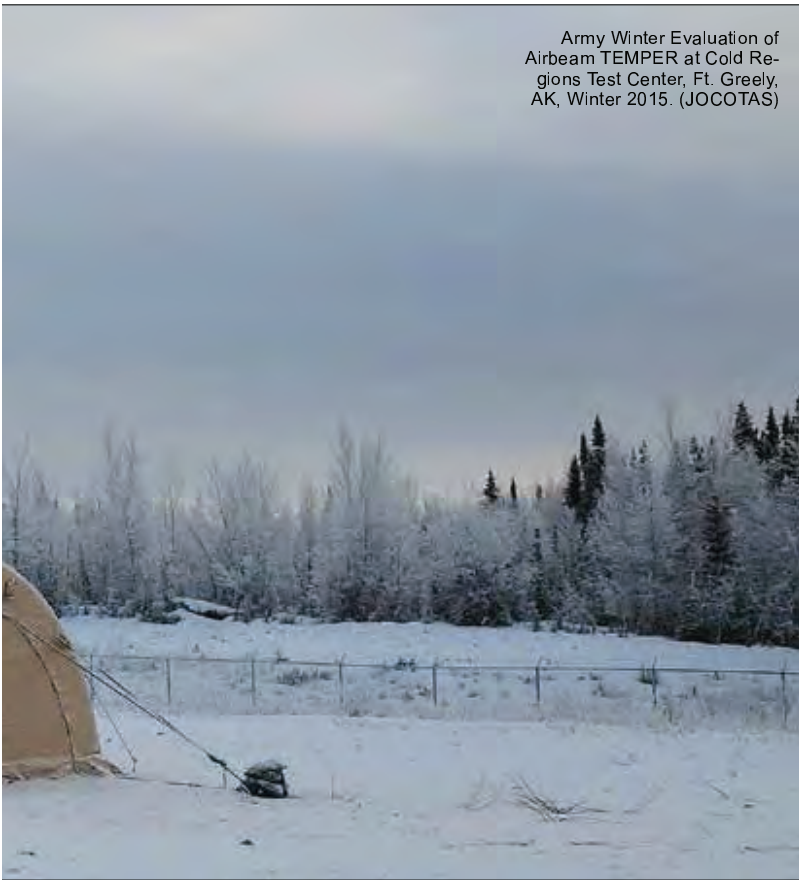
The Marine Corps Air-Ground Task Force (MAGTF) is America’s expeditionary force in readiness, sea-based and mobile. In the forward to Expeditionary Force 2021, General James Amos, former Commandant of the Marine Corps, provides the vision to “maintain a credible, effective and immediate deterrent to thwart potential adversaries and expand operational reach and tactical flexibility to defeat foes throughout the littorals”, areas where the sea and land merge.

Standardizing for Any Contingency

The Joint Committee on Tactical Shelters (JOCOTAS) is expanding its role into contingency basing (CB) activities by leveraging Joint Standardization Board (JSB) tenets focused on interoperability and enhanced supportability. The strategy to employ the JSB approach was driven by a tasking from the Contingency Basing Executive Council (CBEC) Working Group to utilize existing standardization boards to reduce basing sustainment requirements.

Established in 1975 by the the DoD/Office of Land Warfare, JOCOTAS became the primary entity directing that the Joint Services work together to solve the problem of over two hundred rigid wall shelter research, development, test and evaluation (RDT&E) programs. The strategy selected was to create a standard family of 17 shelters for program managers to use and a waiver process to follow if a nonstandard shelter was required. In 1995, JOCOTAS added soft wall shelters to its mission area. In 2006, the Defense Standardization Program

Army Winter Evaluation of
Airbeam TEMPER at Cold Re-
gions Test Center, Ft. Greely,
AK, Winter 2015. (JOCOTAS)



Office (DSPO) chartered JOCOTAS as a JSB for shelters.

On February 4, 2015, the JOCOTAS voting members approved a draft charter that expanded its JSB role to include systems, components, and practices that reduce battlefield use of fuel and water while cutting the creation and disposal burden of waste products. The rationale for expansion of the JSB are the ongoing multi-service technology and development efforts focused on Expeditionary Mobile Base Camp VT demonstrations which began as the Joint Net Zero Science and Technology Objective demonstration (STO-D) in 2009. In particular, Army science and technology projects VT4 and VT5 capability elements have broadened efforts on basing from shelters and protection to now include energy, water, and waste management. In addition to the VT5 element, the Sustainability and Logistics-Basing (4a) Technology Enabled Capability Demonstration (TeCD) is demonstrating new technologies as well as best of breed commercial products across the expeditionary basing spectrum.

The combined charter will refer to the mission as the Joint Standardization Board for Tactical Shelter and Expeditionary Basing Systems (JSB-TS&EBS). The charter is currently in the final stages of staffing.

Evaluation by Demonstration

The Contingency Basing Integration Evaluation Center (CBITEC) is focused on integration of protection, construction, environmental and operational energy capabilities for temporary and semi-permanent basing. The CBITEC is the Maneuver Support Center of Excellence (MSCoE) venue to train personnel; assess capabilities; evaluate

Expeditionary Lighting

Lighting for expeditionary practices requires threat protection, energy efficiency, and durability. Jameson shelter and field medical lighting have evolved over the last 15 years to include fluorescent and LED models that meet this key criteria.

The newer LED lights retain the benefits of the fluorescent models. Compact and durable, Jameson shelter lights offer multi-volt capability, on-off switches, flicker-free light and superior hot or cold temperature performance. LED technology brings the added benefits of longer life, lower power consumption, glare reduction, improved strain relief, push button dimming and black-out capabilities.

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Air Force testing in Kuwait of Utilis shelters with PV Fly compared to USAF small shelter. (JOCOTAS)

technologies; integrate construction techniques, environmental programs, operational energy strategies, base defense capabilities, and systems related

to CB in an operational environment. MSCoE, Ft. Leonard Wood, MO, is the Army's force modernization proponent for requirements definition

and development of CB and protection (basing) capabilities in support of combatant commanders. MSCoE operates CBITEC to accelerate development of capabilities by integrating them from the earliest phases of planning and design, placing emphasis on temporary and semi-permanent construction. Evaluations at CBITEC validate advanced materiel and non-materiel solutions for enhancing base camp sustainability and security, as compared to current baselines.

CBITEC enables MSCoE and its partners to assess capabilities and evaluate innovative technologies at one site dedicated to the integration of solutions into CB operations. The CBITEC team employs a multi-phase approach to define capability gaps, solicit potential solutions, assess candidates, prepare for and evaluate concepts and technologies, and generate action plans. Typically, a candidate solution will have a Technology Readiness Level (TRL) from TRL 4 to TRL 6, or higher. Participation is open to government, industry, and academia.

CBITEC has the added benefit of providing a training venue for units and

Uni-Skin, Multi-Purpose

UTS Systems, LLC provides integrated system solutions for CBRN Collective Protection (Col Pro), Airlocks, Base Camps, Medical Facilities, and Command & Control. In addition, UTS Systems manufactures a complete line of shelters including Utilis and the innovative UTS "Single Skin" Col Pro with chemical/biological barrier infused into the outer fabric. UTS Systems shelters have been successfully tested by the U.S. Army at Aberdeen Proving Ground (APG), MD. The UTS design with its ridge hinges and locking eave purlins has been field-proven for more than ten years.

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Air Force winter testing of small shelters compared to Utilis with Flies. (JOCOTAS)

leaders to teach base camp sustainability principles. It also provides a realistic facility to train base camp management staffs prior to deployment. Previously, these staffs had no location to conduct this critical pre-deployment training. It can also support the Army Force Generation (ARFORGEN) process by serving as a realistic location to conduct mobilization readiness exercises for units deploying with the mission to manage base camps.

The Sustainability Logistics Basing - Science and Technology Objective Demonstration (SLB-STO-D) employs a model based systems engineering approach that integrates technologies which reduce the demand for fuel and water while minimizing the production of waste products. The model is calibrated by field assessments of different sets of integrated technology and non-materiel solution sets. Outputs from the demonstration are mapped against quality of life attributes that enable warfighter readiness. The SLB-STO-D is focused on highly-mobile, transportable expeditionary basing systems that act as force projection platforms.

The program is managed by the Natick Soldier Research, Development and Engineering Center (NSRDEC), Natick, MA. The purpose of the STO-D is to develop and integrate technologies along with non-materiel solutions that demonstrate an optimized integrated approach to reducing sustainment requirements for small contingency base operations via a suite of capabilities which reduce the need to deliver water and fuel to [base and the burden of having to collect, manage, and dispose of solid and liquid waste. The Integrated capability solution sets demonstrated will reduce power requirements to environmentally condition habitation spaces (heat and cool); increase power sourcing efficiency via more effective power generation and management; increase

water use efficiency via water sourcing, recycling, repurposing, and management; reduce creation of solid and liquid waste products, and optimize waste management; objective being to increase waste disposal efficiency via energy conversion and waste mitigation strategies. This STO-D will hold multiple, operationally-relevant, integrated demonstrations in FY15 and FY16. Finally, a capstone-integrated demonstration is being planned along with acquisition partners for FY17. One of the goals for all the demonstrations is to showcase technologies with greatest impact to base camps with potential for transition at TRL 6 to programs of record.

Contingency Basing Programs of Record

The Air Force (AF) Basic Expeditionary Airfield Resources (BEAR) mobile base camp system established the benchmark for prepackaged basing capabilities within DoD for many years. The BEAR system can be configured to support limited and “bare base” missions ranging in size for 150 to 3,300 personnel. It is designed to support AF operations in austere locations with a runway, taxiway, adequate parking for aircraft, and a source of potable water. BEAR is a complete system with aircraft shelters, flightline equipment, industrial equipment and “beddown modules” that include billeting, field feeding, hygiene, environmental control, power generation/distribution and water processing and delivery. The system has prepositioned assets worldwide for rapid response to any contingency.

In 2014, a major modernization effort, BEAR Order of Battle (BOB), began focusing on developing efficiencies in packing, delivery and usage. This translates to reducing energy demand, increased use of alternative and renewable

energy sources, and a change in culture to more effectively inculcate the concepts of conservation and efficiency. The AF Civil Engineer Center is the major basing technology partner. The BEAR project office, Scott AFB, co-chairs the Joint Expeditionary Basing Working Group (JEBWG) with Force Provider and is a key player within the DoD basing technology and JOCOTAS communities.

Joint efforts between the AF Civil Engineer Center and NSRDEC also included Tropical Testing at Anderson AFB, Guam. The AF tested two shelter configurations; their standard internal frame barrel-shaped Small Shelter and an external frame Gable Shelter. Both had Energy Efficient Kits installed; tests were conducted with different configurations; with/without flys, insulated liners, etc. to evaluate the efficiencies of each. Energy efficiencies of over 50%, and in some cases over 60% were achieved, and the viability of cooling two shelters with one ECU was demonstrated. AF also did winter testing at Ellsworth AFB in, South Dakota; the viability of heating two shelters with a single BEAR 130K BTU heater with 50% energy savings was demonstrated. At this time, those results are classified.

Force Sustainment

The Army's key technology transition partner for Contingency Basing is Product Manager Force Sustainment Systems (PdM FSS) who manages Force Provider. Force Provider is the DoD's premier base camp complex and recently transformed from a 600-Soldier Module baseline to a 150-Expeditionary Soldier configuration. The new generation incorporates energy-efficient airbeam shelter systems, solar shades, microgrids, water conservation and reuse capabilities, and TRICON-based kitchen and hygiene systems. PdM FSS can also tailor special kits to support 50 personnel. The Force Provider camps are deployed worldwide supporting military and humanitarian missions. Note that the former PdM FSS, LTC

Ross Poppenberger recently departed Natick to attend the U.S. Navy War College in Newport, RI. His replacement, LTC Frank Moore became PdM FSS on 23 Jun 2015.

PdM FSS also manages the Base Camp Integration Lab (BCIL) located at Fort Devan, MA. The BCIL is a five plus acre, fully-instrumented facility that compares a 150-warfighter standard base camp to a similar camp augmented with new, promising technologies and emerging industry capabilities. In 2014, the BCIL supported evaluation of a third, rigid wall shelter-based system. The reduction in energy utilization was significantly improved over tentage-based systems, leading to a new variant for long-term deployments. Many times, the evaluations are done with User Troops (this is the term we use when describing soldiers in a test with over 2000 in participation to date. The BCIL will host SLB-STO-D evaluation of fourteen technologies in July.

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USMC Soft Systems

To support Expeditionary Force 2021, the Marine Corps is upgrading its Family of Tactical Soft Shelters to provide protection from natural environments incorporating the latest energy efficiency advancements. Reducing energy consumption protects

warfighters by cutting convoy numbers and increases lethality by making more Marines available to seek out and destroy enemy units. Also underway are programs on rigid wall shelters that house electronics maintenance and an expandable BICON project that reduces shelter transport cube by

50%. The Marine Corps works closely with the other Services in considering commercial off-the-shelf solutions.

Doctrine at the Core

DoD and the Joint Services are also laying the foundation for an institutional activity by creating doctrinal building blocks to include Capabilities Development (CDD) and Production Documents (PDD), DoD Directives and Instructions, and service regulations. To support innovation and integration of new technologies into standard rigid wall shelters, the Combined Arms Support Command (CASCOM) initiated a capability development document (CDD) for the Army Standard Family of Rigid Wall Shelters (ASF-RWS). The ASF-RWS CDD scope includes all types and sizes of standard shelters required to support the extensive variety of rigid wall shelter requirements. To complement the ASF-RWS, a CDD for

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a Standard Family of Soft Wall Shelters (SF-SWS) has recently been initiated with the objective to promote standardization across the services with a goal of reducing acquisition and sustainment costs. The CDD will include common parameters as well as service unique attributes.

Because rigid and soft wall shelters are normally components of major end items, the CDDs will support RDTE efforts to improve performance, reduce cost, maximize options/features, and perform testing with the final product being an acquisition ready technical data package. Both programs will update, replace, and increase the number of standard rigid and soft wall shelters available to meet specific end item requirements. The proliferation of electronic equipment has increased the requirement for environmental control across the battlefield. Many of the existing shelters were not designed to minimize energy consumption. A primary objective of the ASF-RWS and SF-SWS programs is the incorporation of energy efficiency technologies to significantly reduce the energy footprint of all sizes and types of shelters. Rigid wall configurations will include twenty-foot shelters, fractional sizes that combine to a twenty-foot equivalent unit (TRICONS, BICONS), and vehicle mounted shelters for light and medium tactical vehicles. Special purpose add-on kits include collective protection, electromagnetic reduction, and ballistic protection kits.

DOD-D 3000.10 established policy for Contingency Basing Outside of the United States and designated the USD (AT&L) as the lead. As a result, the CBEC was chartered on October 31, 2014 as the senior governance body for the policy, capability development, direction, and synchronization of all aspects of CB across the DoD. JOCOTAS was identified as a relevant JSB and is an advisory member to the CBEC. To date, the CBEC has established four working groups to; assist in the front end analysis for preparation of a Joint publication on contingency basing, synchronize Joint Service efforts on CB materiel improvements, and lead a collaborative effort to clarify basing lexicon. The latter issue is a major problem because multiple terms are in use for the same basing system capability or attribute. For example, there were many definitions in use describing a forward operating base (FOB) and initial contingency location. The groups have also identified CB Life cycle functions from initial planning through transition or closure; cross-walked life cycle location capability descriptions such as initial contingency location against existing NATO, DoD and Joint Service standards, and identified trigger points that drive location descriptions to change.

Bi-Annual Convention

On May 19-20, 2015, NSRDEC and PdM FSS co-hosted a shelter and expeditionary basing strategy meeting for members from across DoD. The focus of the meeting was establishing a path forward to operationalize new areas of responsibility into action and working groups. Forty-two participants attended the meeting that covered fourteen shelter and expeditionary basing project updates and a workshop. Briefings and briefing synopses are posted on the NSRDEC JOCOTAS website.

Looking Ahead

JOCOTAS and its DoD partners are expanding the sustainable



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Rigidity Meets Mobility

Sea Box is now in production of its newest rigid wall shelter for the military. The Relocatable Simulation Shelter (RSS) has been specifically designed to provide a sturdy structure to house military training devices. The government had a need for durable and efficient shelters to support safe simulation system operations in a variety of environmental conditions.

The government also wanted a structure that could be easily disassembled and transported for repeated use. Sea Box responded with a unique shelter that features a patented pop-up roof design with insulated steel wall panels which give it a high insulation value and superior noise absorption so simulation operations can be carried on safely and securely. These shelters can be set up in two days for the most efficient use of time and manpower. The RSS comes equipped with Environmental Control Units, electrical, and lighting systems.

More info: seabox.com

expeditionary basing portfolio to insure that highly mobile, force projection platforms are available to meet land warfare mission staging challenges. Requirement documents are identifying key capability gaps that enable RDT&E program managers to develop and field systems to facilitate effective operations with a minimal logistics footprint. Communication, knowledge transfer, and a culture of expeditionary ethos are key elements to mission success. ■



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